

*iConverter*® GX/TM2 Media Converter  
and  
Network Interface Device



**STANDALONE AND PLUG-IN MODULE  
USER MANUAL**

# Table of Contents

1.0	Overview .....	3
1.1	General Description .....	3
1.1.1	Advanced Features .....	3
2.0	Port Structure .....	4
2.1	Overview .....	4
2.1.1	Management Port.....	4
2.1.2	UTP and Fiber Ports .....	4
2.1.3	Backplane Ethernet Ports .....	4
3.0	Installation Procedure .....	5
3.1	Overview .....	5
3.2	Configuring DIP-switches .....	6
3.2.1	Board-Mounted Bank 1 Settings .....	6
3.2.2	Board-Mounted Bank 2 Settings .....	9
3.3	Installing the Module and Connecting Cables .....	10
3.4	Configuring the Module via Command Line Interface .....	11
3.4.1	Setting IP and Control Preferences .....	13
3.4.2	Setting SNMP Preferences .....	16
3.4.3	Enabling/Disabling Soft-switch Reload.....	19
3.4.4	Access the GX/TM2 Remotely .....	20
3.5	Verifying Operation .....	23
4.0	Detailed Module Configuration .....	24
4.1	Overview .....	24
4.1.1	Pause Setting (Configuration Setting 13) .....	26
4.1.2	Module Management Mode (Configuration Setting 17 and 18).....	27
4.2	Port Configuration .....	28
4.2.1	Port Access .....	29
4.2.2	Bandwidth Control .....	29
4.2.3	Layer 2 Control Protocol Filter .....	30
4.2.4	SFP Information .....	31
4.2.5	802.3ah Parameters.....	33
4.2.6	802.3ah Events .....	35
4.2.7	Port VLAN .....	36
4.2.8	Tagged VLAN .....	38
4.2.9	VLAN Membership Table .....	40
4.2.10	cNode Loopback .....	43
4.2.11	Port Statistics .....	43
5.0	GX/TM2 Specifications .....	45
6.0	Troubleshooting Guide .....	46
6.1	Overview .....	46
6.1.1	Power Issues.....	46
6.1.2	Fiber Issues.....	46
6.1.3	UTP Issues.....	47
7.0	Warranty .....	48

## 1.0 OVERVIEW

This document describes the installation and configuration of the *iConverter* GX/TM2 standalone Network Interface Device and plug-in modules. The difference between the module types are indicated using the following legend throughout this User Manual:

**SA** - Standalone

**PI** - Plug-In

### 1.1 GENERAL DESCRIPTION

The Omnitron *iConverter*® GX/TM2 is a carrier-class media converter and a Network Interface Device (NID) that provides 10BASE-T, 100BASE-TX or 1000BASE-T (10/100/1000 UTP) to 1000BASE-X Fiber media conversion with integrated management.

The GX/TM2 conforms to Ethernet in the First Mile (EFM) fiber standards to support Fiber-to-the-X (FTTX) Metropolitan access and Enterprise LAN networks. GX/TM2 media converters provide managed copper demarcation points at the customer premises and network edge, offering service provisioning functions, such as Quality of Service and Bandwidth Control (rate-limiting) capabilities.

The IP-based remote management of the GX/TM2 can be accessed by Omnitron's *NetOutlook*® SNMP Network Management Software, third-party SNMP clients and Telnet. The management IP address is configured manually or as a DHCP client in the configuration menu. IP-less remote management is supported via 802.3ah OAM or Secure OAM protocols. A menu-driven CLI is accessible via Telnet, serial console port, or a modem connection to the serial console port.

#### IMPORTANT

This manual provides information on the installation and configuration of the module using the command line interface (serial console). For ongoing network management, Omnitron Systems recommends *NetOutlook*, an SNMP-based Network Management Software.

*NetOutlook* provides an efficient, user-friendly way to configure, monitor and manage devices installed on a single network or on a series of networks by providing an intuitive graphical display with real-time status and alarm (trap) information. The user can easily manage *iConverter* equipment on a large Enterprise network or Metropolitan Area network (MAN) from a single location without the need of additional resources.

**The firmware of the Network Management Module (NMM) and *NetOutlook* must be the same or greater than the firmware on the GX/TM2 for the module to be managed.**

#### 1.1.1 Advanced Features

The GX/TM2 features Port VLAN, Tag VLAN, Provider VLAN and QoS prioritization which are defined in the IEEE 802.1Q, 802.1ad and 802.1p specifications. Ethernet Virtual Connections can be configured with Provider VLAN to support E-Line and E-LAN connections on Metro Ethernet Networks.

Access to the management control can be restricted with the Port VLAN and Tag VLAN features, helping to prevent Denial-Of-Service (DoS) and unauthorized management access.

Other advanced features include:

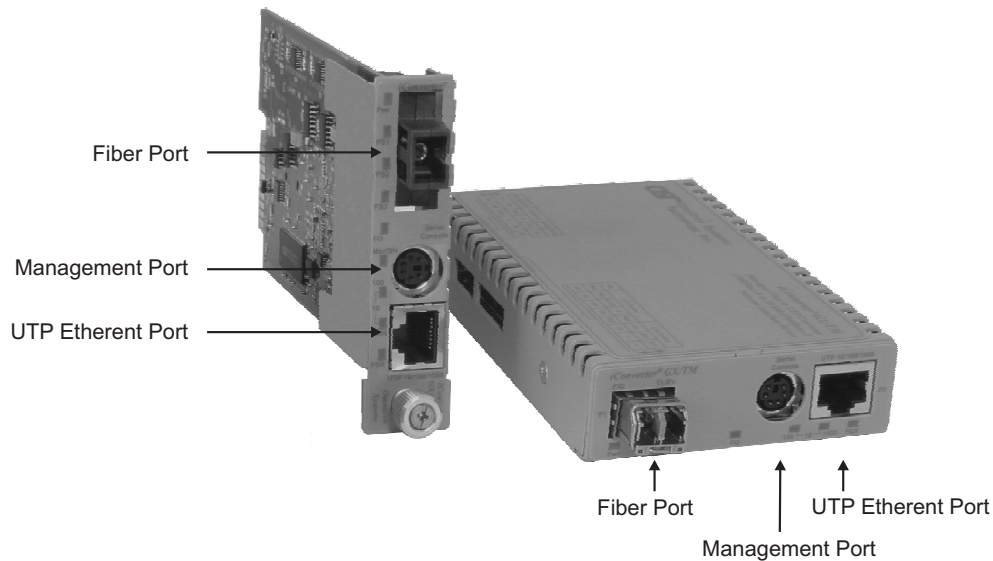
- Real-time MIB statistics reporting (38 variables)
- 802.3ah OAM and Extensions
- SNMPv1, SNMPv2c, SNMPv3
- Port Access Control
- cNode Level 1 Agent

Refer to the appropriate sections for configuration information.

## 2.0 PORT STRUCTURE

### 2.1 OVERVIEW

The front panel of the GX/TM2 provides access to the management (serial console), UTP and fiber ports. The fiber port will vary depending on the connector type; ST, SC, MT-RJ, LC or SFP supporting 1000BASE-FX transceivers. The plug-in module features two additional Ethernet backplane ports for connectivity via the chassis backplane.



#### 2.1.1 Management Port PI SA

The GX/TM2 features a Serial RS-232 Console Port (aka Craft Interface) which can be connected to a computer for initial setup and configuration. The Serial Console Port is accessed through the mini DIN-6 female DCE interface. Connect the interface to a computer's DB-9 serial port using the mini DIN-6 male to DB-9 female cable adapter (Part # 8082-0), which is included with the GX/TM2.

An optional DB-9 male to female straight-through serial cable is available for extension (Part # 8081-3).

#### 2.1.2 UTP and Fiber Ports PI SA

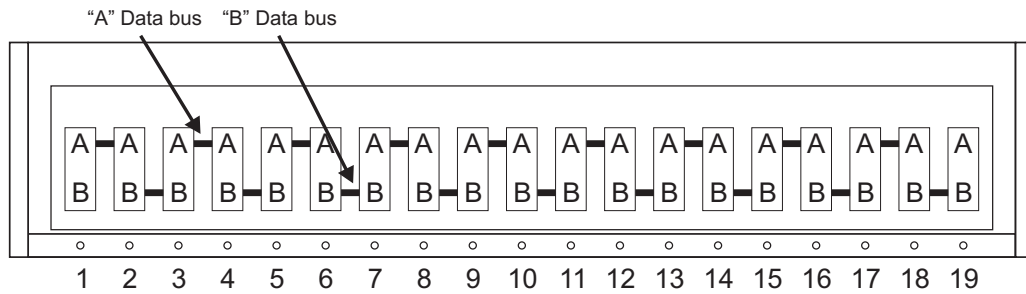
The UTP Ethernet port supports 10BASE-T, 100BASE-TX and 1000BASE-T protocols, auto-negotiation and manual forced modes for half and full duplex. The UTP port can be enabled or disabled via network management. A port disabled with the Port Access Control feature will still connect and allow 802.3ah OAM or IP-less (secure) OAM communication, but blocks normal data traffic.

The fiber interface supports the 1000BASE-X protocol. The fiber interface operates in manual mode or auto-negotiation and supports full duplex operation. The fiber port can be enabled or disabled via network management. A port disabled with the Port Access Control feature will still connect and allow 802.3ah OAM or IP-less (secure) OAM communication, but blocks normal data traffic.

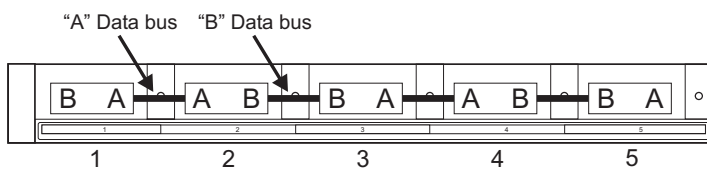
#### 2.1.3 Backplane Ethernet Ports PI

The plug-in module supports two additional 1000Mbps Ethernet Backplane Ports. The Backplane Ports A and B allow Ethernet data connectivity between adjacent modules that support the gigabit backplane in an *iConverter* chassis. The two backplane ports can be disabled or enabled via a DIP-switch or network management.

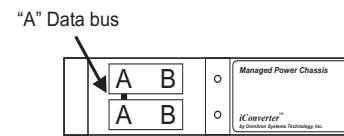
The *iConverter* 19-Module, 5-Module and 2-Module Chassis backplanes provide Ethernet data connectivity between adjacent slots or ports. The A and B backplane ports connect the slots as shown in the following illustration.



*19-Module Chassis*



*5-Module Chassis*



*2-Module Chassis*

## 3.0 INSTALLATION PROCEDURE

### 3.1 OVERVIEW

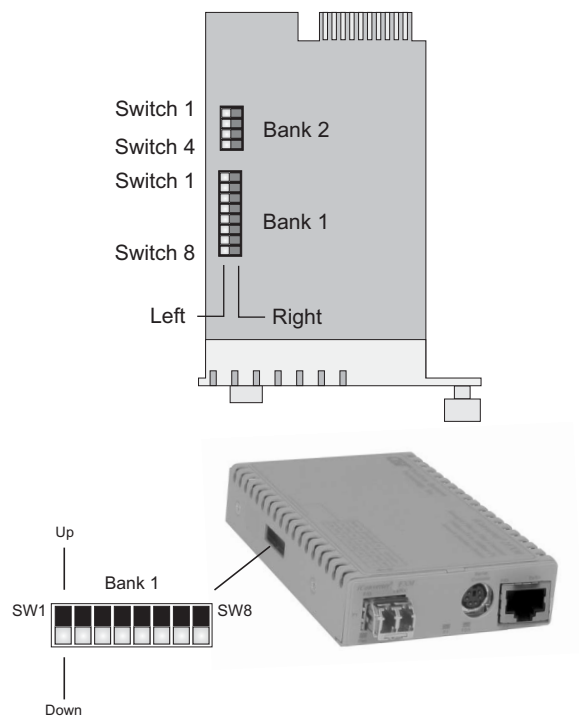
The following steps outline the installation and configuration procedures for the GX/TM2. Refer to the specified sections for detailed instructions.

- Configuring DIP-switches (Section 3.2)
- Installing the Module and Connecting Cables (Section 3.3)
- Configuring the Module via Command Line Interface (Section 3.4)
- Verifying Operation (Section 3.5)

When the setup and configuration procedures are completed, the GX/TM2 has been configured with the basic setup requirement for standard operation. To configure the module with additional features, see Section 4.0, “Detailed Module Configuration”.

3.2 CONFIGURING DIP-SWITCHES **PI** **SA**

The GX/TM2 plug-in module has two board-mounted DIP-switches. The standalone unit has one bank of DIP-switches. The locations of the DIP-switches are illustrated below.



DIP-switch Locations

3.2.1 Board-Mounted Bank 1 Settings **PI** **SA**

DIP-switch Bank 1 is available on both the plug-in and standalone modules. The table indicates the position of the switch; Left/Down or Right/Up. As indicated in the DIP-switch location diagram, Left and Right refers to the plug-in module and Down and Up refers to the standalone module.

**PI** (Left/Right) **SA** (Up/Down)

Switch	Left/Down (Factory Default)	Right/Up
SW1	AN: Fiber Auto-Negotiation	Man: Fiber Manual Negotiation
SW2	AN: UTP Auto-Negotiate	Man: UTP Manual
SW3	1000: UTP 1000Mbps	10-100: UTP 10-100Mbps
SW4	100: UTP 100Mbps	10: UTP 10Mbps
SW5	FDX: UTP Full-Duplex	HDX: UTP Half-Duplex
SW6 - SW8	See Link Mode DIP-Switch Table in Section 3.2.1.6	

3.2.1.1 SW1 - Fiber Auto/Manual Negotiation “AN Man”

When this DIP-switch is in the Auto-Negotiate “AN” position (factory default), the fiber optic port automatically determines the duplex and pause modes of the connecting fiber optic device. If the connecting fiber optic device cannot provide the proper signal to indicate its own mode of operation, the DIP-switch should be set to the Manual mode “Man” position.

**NOTE: When the fiber optic port operates in Auto-Negotiation mode, the port advertises for Pause. When the fiber optic port operates in Manual mode, Pause is disabled.**

**NOTE: The fiber optic port of the GX/TM2 works in Full-Duplex mode in both Auto and Manual Negotiation modes.**

### 3.2.1.2 SW2 - UTP Auto/Manual Negotiation “AN/Man”

When this DIP-switch is in the “AN” position (factory default), the UTP port automatically determines the Speed, Duplex and Pause mode of the connecting UTP device. If the connecting UTP device cannot provide the proper signal to indicate its own mode of operation, then the DIP-switch should be set to the Manual mode “Man” position. Manual mode requires manually configuring the UTP port to match the Speed and Duplex mode of the connecting UTP device using the “10/100” and “FDX/HDX” DIP-switches.

PI SA

SW2	SW3	SW4	SW5	UTP Mode of Operation
AN	1000	100 or 10	FDX	Configured for Auto Negotiation. It advertises and negotiates in this order: <b>1000F, 1000H, 100F, 100H, 10F, 10H</b>
AN	1000	100 or 10	HDX	Configured for Auto Negotiation. It advertises and negotiates in this order: <b>1000H, 100F, 100H, 10F, 10H</b>
AN	10-100	100	FDX	Configured for Auto Negotiation. It advertises and negotiates in this order: <b>100F, 100H, 10F, 10H</b>
AN	10-100	100	HDX	Configured for Auto Negotiation. It advertises and negotiates in this order: <b>100H, 10F, 10H</b>
AN	10-100	10	FDX	Configured for Auto Negotiation. It advertises and negotiates in this order: <b>10F, 10H</b>
AN	10-100	10	HDX	Configured for Auto Negotiation. It advertises and negotiates in this order: <b>10H</b>
MAN	1000	100 or 10	FDX	Configured for Auto Negotiation. It advertises and negotiates in this order: <b>1000F, 1000H, 100F, 100H, 10F, 10H.</b> When the port is set to 1000, it is always in AN mode.
MAN	1000	100 or 10	HDX	Configured for Auto Negotiation. It advertises and negotiates in this order: <b>1000H, 100F, 100H, 10F, 10H.</b> When the port is set to 1000, it is always in AN mode.
MAN	10-100	100	FDX	Port forced to 100 FDX
MAN	10-100	100	HDX	Port forced to 100 HDX
MAN	10-100	10	FDX	Port forced to 10 FDX
MAN	10-100	10	HDX	Port forced to 10 HDX

*UTP Port Configuration Matrix*

### 3.2.1.3 SW3 - UTP Speed Gigabit/10-100 “1000/10-100”

When the “1000/10-100” DIP-switch is in the “1000” position (factory default), the UTP always operates in 10/100/1000Mbps Auto-Negotiation mode. The UTP port auto-negotiates to a speed of 10Mbps, 100Mbps or 1000Mbps with the connected UTP device. In this mode, the UTP “AN/Man” and UTP “100/10” DIP-switches have no effect.

When the “1000/10-100” DIP-switch is in the UP 10/100Mbps “10-100” position and the UTP “AN/Man” DIP-switch is in the manual “Man” position, the UTP port operates at the Speed and Duplex modes set by the “10/100” and “FDX/HDX” DIP-switches.

When the “1000/10-100” DIP-switch is in the 10/100Mbps “10-100” position and the UTP “AN/Man” DIP-switch is in the Auto-Negotiation “AN” position, the maximum Auto-Negotiation setting for the Speed, Duplex and Pause mode of the UTP port is limited by the “10/100”, “FDX/HDX” and Pause “Off/On” DIP-switches.

See the UTP Port Configuration Matrix.

### 3.2.1.4 SW4 - UTP 100/10Mbps “100/10”

When the UTP “AN/Man” DIP-switch (described above) is in the manual “Man” position, the “100/10” DIP-switch determines the speed of operation for the UTP port. Set the “100/10” DIP-switch to match the speed of the connected UTP device.

See the UTP Port Configuration Matrix.

### 3.2.1.5 SW5 - UTP Full/Half Duplex “FDX/HDX”

Setting the UTP Full/Half-Duplex DIP-switch to the “FDX” position (factory default) forces the UTP port to operate in Full-Duplex. Setting this DIP-switch to UTP Half-Duplex “HDX” forces the UTP port to operate in Half-Duplex. Adjust the UTP Full/Half-Duplex DIP-switch to match the duplex mode of the connected UTP device.

See the UTP Port Configuration Matrix.

### 3.2.1.6 SW6, SW7, SW8 - Link Modes

These three DIP-switches configure the link mode settings. The following table details possible Link Mode DIP-switch configurations.

PI				SA			
SW6	SW7	SW8	Result	SW6	SW7	SW8	Result
Left	Left	Left	Enables Link Segment mode (LS).	Down	Down	Down	Enables Link Segment mode (LS).
Right	Left	Left	Enables Link Propagate mode (LP).	Up	Down	Down	Enables Link Propagate mode (LP).
Left	Right	Left	Enables Remote Fault Detection mode plus Link Segment mode (RFD+LS).	Down	Up	Down	Enables Remote Fault Detection mode plus Link Segment mode (RFD+LS).
Right	Right	Left	Enables Remote Fault Detection mode plus Link Propagation mode (RFD+LP).	Up	Up	Down	Enables Remote Fault Detection mode plus Link Propagation mode (RFD+LP).
Left	Left	Right	Enables Symmetrical Fault Detect mode (SFD).	Down	Down	Up	Enables Symmetrical Fault Detect mode (SFD).
Right	Left	Right	Asymmetrical Link Propagate Port 1 to Port 2 (ALP P1-P2).	Up	Down	Up	Asymmetrical Link Propagate Port 1 to Port 2 (ALP P1-P2).
Left	Right	Right	Asymmetrical Link Propagate Port 2 to Port 1 (ALP P2-P1).	Down	Up	Up	Asymmetrical Link Propagate Port 2 to Port 1 (ALP P2-P1).
Right	Right	Right	Asymmetrical RFD+LP Port 1 to Port 2 (ARFD P1-P2).	Up	Up	Up	Asymmetrical RFD+LP Port 1 to Port 2 (ARFD P1-P2).

**NOTE: Connecting two converters set to any of the RFD modes is illegal and will cause a “deadly embrace” lockup.**

**NOTE: It is recommended to keep the LS setting (default) until initial configuration is complete.**



For detailed information on the operation of the different Link Modes, download the application note “*iConverter* Link Modes” available on Omnitron’s web page:

<http://www.omnitron-systems.com/downloads.php>

### 3.2.2 Board-Mounted Bank 2 Settings PI

DIP-switch Bank 2 is available on the plug-in module only.

Switch	Left (Factory Default)	Right
SW1	A-DS: Port A Disabled	A-EN: Port A Enabled
SW2	B-DS: Port B Disabled	B-EN: Port B Enabled
SW3	M/SL: Master/Slave Auto-Select	SL: Slave-Mode Only
SW4	Reserved	Reserved

#### 3.2.2.1 SW1 - Backplane Port A Enabled “A-DS/A-EN”

When the DIP-switch is in the Left “A-DS” position (factory default), Backplane Port A of the GX/TM2 is isolated from the chassis Backplane. When the DIP-switch is in the Right “A-EN” position, Backplane Port A of the GX/TM2 is enabled. This port allows Ethernet Backplane connectivity to an adjacent module via the chassis Backplane Port A. See the backplane illustrations in Section 2.1.3.

#### 3.2.2.2 SW2 - Backplane Port B Enabled “B-DS/B-EN”

When the DIP-switch is in the Left “B-DS” position (factory default), Backplane Port B is isolated from the chassis Backplane. When the DIP-switch is in the Right “B-EN” position, Backplane Port B is enabled. This port allows Ethernet Backplane connectivity to an adjacent module via the chassis Backplane Port B. See the backplane illustrations in Section 2.1.3.

#### 3.2.2.3 SW4 - Master/Slave Auto-Select and Slave-Only “M/SL / SL

When multiple management modules such as the *iConverter* Network Management Module (NMM) and the GX/TM2 (or multiple self-managed modules such as the 10/100M) are installed in the same chassis, only one management module can act as the chassis master. The master management module has the ability to make changes to the settings of the other modules in the chassis, while the slave management modules cannot make the changes. If an NMM is installed in the chassis, the NMM will always be the master, otherwise the lowest slot number with a management module installed will become chassis master.

When this DIP-switch is in the Left “M/SL” position (factory default), the assignment of mastership is automatically negotiated by the installed management modules. To designate a specific management module as the master when no NMM is installed in the chassis, set the DIP-switch on the master module to the Left “M/SL” position, and set the other installed management modules’ DIP-switches to the Right “SL” position to enable Slave-Only mode.

Only the chassis master can change configuration settings of other modules.

#### 3.2.2.4 SW4 - Reserved

This DIP-switch is for factory use only.

**NOTE: DIP-switch marked Reserved must be kept in the Left (factory default) position.**

### 3.3 INSTALLING THE MODULE AND CONNECTING CABLES

PI

- a. Carefully slide the module into an open slot in the chassis. Align the module with the installation guides and ensure that the module is firmly seated against the backplane. Secure the module by fastening the front panel thumbscrew (push in and turn clockwise to tighten) to the chassis front. Verify the “Pwr” LED is ON (indicating the chassis is powered).

SA

- a. The GX/TM2 standalone Network Interface Device (NID) is available in tabletop and wall-mounting models. For wall-mounting, attach the NID to a wall, backboard or other flat surfaces. For tabletop installation, place the unit on a flat and level surface. Attach the rubber feet to the bottom of the NID to prevent the unit from sliding. Make sure the unit is placed in a safe, dry and secure location.

To power the unit using the AC/DC adapter, connect the AC/DC adapter to the AC outlet. Then connect the barrel plug at the end of the wire on the AC/DC adapter to the 2.5mm DC barrel connector (center-positive) on the unit. Confirm that the unit has powered up properly by checking the power status LED located on the front of the unit.

To power the unit using a DC power source, prepare a power cable using a two-conductor insulated wire (not supplied) with a 14 AWG gauge minimum. Cut the power cable to the length required. Strip approximately 3/8 of an inch of insulation from the power cable wires. Connect the power cables to the standalone unit by fastening the stripped ends to the DC power connector.

Connect the power wires to the DC power source. The Power LED should indicate the presence of power.

**WARNING: Note the wire colors used in making the positive, negative and ground connections. Use the same color assignment for the connection at the DC power source.**

**NOTE: If mounting with a safety ground attachment, use the safety ground screw at the rear of the unit.**

PI

SA

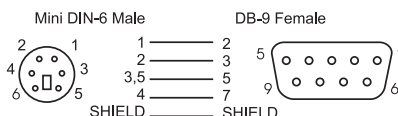
- b. When using a GX/TM2 SFP model, insert the SFP Fiber transceiver into the Port 1 SFP receptacle on the GX/TM2.

**NOTE: The release latch of the SFP Fiber transceiver must be in the closed (up) position before insertion.**

- c. Connect the UTP port via a Category 5 or better cable to a 10BASE-T, 100BASE-TX or 1000BASE-T Ethernet device.
- d. Connect the appropriate multimode or single-mode fiber cable to the fiber port of the installed module. It is important to ensure that the transmit (TX) is attached to the receive side of the device at the other end and the receive (RX) is attached to the transmit side. Single-fiber (SF) media converter models operate in pairs. The TX wavelength must match the RX wavelength at the other end and the RX wavelength must match the TX wavelength at the other end.

### 3.4 CONFIGURING THE MODULE VIA COMMAND LINE INTERFACE PI SA

To configure, attach the GX/TM2 to a DB-9 serial (RS-232) equipped computer with terminal emulation software such as HyperTerminal. The GX/TM2 Serial Console Port (DCE) is a mini DIN-6 female connector which can be changed to a DB-9 connector with the included adapter (Part #8082-0). Attach the ends of a serial cable to the serial port of the PC and the Serial Console Port of the GX/TM2. This is a standard asynchronous serial interface. The pin-outs are illustrated below.



#### *Serial Connector Pin Outs*

Start HyperTerminal and select the correct COM Port in the HyperTerminal “Connect To:” window.

Set the PC’s serial port to the following:

Bits Per Second:	57,600
Stop Bits:	1
Data Bits:	8
Parity:	NONE
Hardware Flow Control:	NONE

Power the chassis containing the GX/TM2 module and press `<ENTER>` to bring up a command line prompt on the attached PC.

The module is configured with the following defaults:

#### **IP**

IP Address:	192.168.1.220
IP Subnet Mask:	255.255.255.0

#### **Passwords**

Serial:	No password assigned
FTP:	No password assigned (not enabled)
Telnet:	public

#### **SNMPv1/v2c Communities**

READ:	public
WRITE:	public

#### **SNMPv3 Parameters**

User 1 name (read only):	guest		
User 2 name (read/write):	admin		
User 1 Privacy pwd:	publicguest	User 1 Authen pwd:	publicguest
User 2 Privacy pwd:	privateadmin	User 2 Authen pwd:	privateadmin

A new GX/TM2 module does not have a password, and will skip the *Password Entry* screen and go straight to the *Management Options* screen. If a password has been set, the *Password Entry* screen will be displayed. Type the password and press <ENTER>, the GX/TM2 will respond with the *Management Options* screen.

PI SA

```
Omnitron Systems Technology, Inc.          iConverter, Serial Agent
Copyright 2001-2007 OST, Inc.              Password Entry

-----
Omnitron Systems Technology      Technical Support:    (949) 250-6510
140 Technology #500             Sales/Products:     (800) 675-8410
Irvine, CA 92618                On the web at:      www.omnitron-systems.com
-----

IP Address    192.168.1.220
MAC           00:00:00:00:00:00

[xxxxxxxxx]
Please enter the password >
```

The *Management Options* screen will be displayed.

PI SA

```
Management Options                      iConverter, Serial Agent

Network Management
1: Chassis and Module Management
2: Set Module Identifier

Management Module Preferences
3: IP and Control Preferences
4: SNMP Preferences
5: Abandon Preference Changes
6: Save Preference Changes
7: Restore to Factory Defaults
8: Restart Management Module
9: Other Networking Features

Management Module Maintenance
10: Firmware Update
11: Set Date/Time

IP Address      = 192.168.1.220
Chassis Number = 1

Enter Choice, (H)elp, E(x)it >
```

### 3.4.1 Setting IP and Control Preferences

An IP address is required for the SNMP manager to address the GX/TM2. The factory default setting is 192.168.1.220. The IP address can be configured manually or automatically as a DHCP client.

#### 3.4.1.1 Setting IP Parameters Manually

To manually configure the IP address and control parameters, select 3 from the *Management Options* screen. The *IP and Control Preferences* screen will appear.

PI	SA
IP and Control Preferences Screen	
iConverter, Serial Agent	
1: Set IP	192.168.1.220
2: Set Subnet Mask	255.255.255.0
3: Set Gateway	192.168.1.1
4: Chassis Number	1
5: Chassis Name (also sysName)	GX/TM2
6: Enable/Disable TELNET	Enabled
7: Enable/Disable FTP	Disabled
8: Enable/Disable Soft Switch Reload	Disabled
9: TELNET Password	*****
10: FTP Password	
11: Serial Password	
Enter Choice, Management Options Screen(0), (H)elp, E(x)it >	

To configure the IP address of the GX/TM2, select 1 at the *IP and Control Preferences* screen, and press <ENTER>. Backspace over the existing value, type the new value (in x.x.x.x format), and press <ENTER>.

To configure the subnet mask of the GX/TM2, select 2 at the *IP and Control Preferences* screen, and press <ENTER>. Backspace over the existing value, type the new value (in x.x.x.x format), and press <ENTER>.

To configure the gateway of the GX/TM2, select 3 at the *IP and Control Preferences* screen, and press <ENTER>. Backspace over the existing value, type the new value (in x.x.x.x format), and press <ENTER>.

To save the new values, select 0 and press <ENTER> to return to the *Management Options* screen, then select 6 and press <ENTER> to *Save Preference Changes*.

### 3.4.1.2 Setting IP Parameters as DHCP Client

To configure the IP automatically as a DHCP client, select 9 from the *Management Options* screen. The *Other Networking Features* screen will appear.

PI SA

Management Options	iConverter, Serial Agent
Network Management	
1: Chassis and Module Management	
2: Set Module Identifier	
Management Module Preferences	
3: IP and Control Preferences	
4: SNMP Preferences	
5: Abandon Preference Changes	
6: Save Preference Changes	
7: Restore to Factory Defaults	
8: Restart Management Module	
9: Other Networking Features	
Management Module Maintenance	
10: Firmware Update	
11: Set Date/Time	
IP Address = 192.168.1.220	
Chassis Number = 1	
Enter Choice, (H)elp, E(x)it > 9	

PI SA

Other Networking Features Screen	iConverter, Serial Agent
1: Enable/Disable DHCP Client	Disabled
2: Enable/Disable Keep Alive Trap	Disabled
3: Keep Alive Trap interval (10-600 secs)	10
4: Enable/Disable SW1 Switch Block	Enabled
5: Serial Baud Rate	57600 bps
Enter Choice, Management Options Screen(0), (H)elp, E(x)it >	

To enable DHCP client, select 1 at the *Other Networking Features* screen and follow the screen prompts to enable DHCP.

To save the new values, select 0 and press <ENTER> to return to the *Management Options* screen, then select 6 and press <ENTER> to *Save Preference Changes*.

### 3.4.1.3 Setting the Chassis Number and Name

A Chassis Name, or sysName, can be assigned for identification of the GX/TM2 in the SNMP client. The name can be any 1-32 character alphanumeric string.

The Chassis Number can remain as 1 (factory default) when the GX/TM2 is installed without an *iConverter* NMM in the same chassis. When the GX/TM2 is installed in the same chassis as an NMM, then the GX/TM2 must be set to the Chassis Number of the NMM.

To set the Chassis Number, select 4 at the *IP and Control Preferences* screen, press <ENTER> and follow the instructions to enter the chassis number.

To set the Chassis Name, select 5 at the *IP and Control Preferences* screen, press <ENTER> and follow the instructions to enter the chassis name.

**NOTE:** When the NMM is installed into the chassis and is set to Remote OAM, the chassis number of the GX/TM2 is automatically assigned by the NMM.

PI SA

IP and Control Preferences Screen		iConverter, Serial Agent
1:	Set IP	192.168.1.220
2:	Set Subnet Mask	255.255.255.0
3:	Set Gateway	192.168.1.1
4:	Chassis Number	1
5:	Chassis Name (also sysName)	GX/TM2
6:	Enable/Disable TELNET	Enabled
7:	Enable/Disable FTP	Disabled
8:	Enable/Disable Soft Switch Reload	Disabled
9:	TELNET Password	*****
10:	FTP Password	
11:	Serial Password	

Enter Choice, Management Options Screen(0), (H)elp, E(x)it >

To save the new values, select *0* and press <ENTER> to return to the **Management Options** screen, then select *6* and press <ENTER> to **Save Preference Changes**.

#### 3.4.1.4 Setting GX/TM2 Passwords

The GX/TM2 is shipped from the factory without password protection on the Serial Console Port. It is highly recommended that the network administrator set a password in order to prevent unauthorized access to the unit. The password can be any 1-32 character alphanumeric string.

The GX/TM2 is shipped from the factory with Telnet enabled and FTP disabled. From the **IP and Control Preferences** screen, select *6* to enable or disable Telnet, and select *7* to enable or disable FTP.

To set the password for Telnet access, select *9* at the **IP and Control Preferences** screen, press <ENTER> and then follow the screen prompts to enter and verify the password. The default password for Telnet access is “public”.

To set the password for FTP access, select *10* at the **IP and Control Preferences** screen, press <ENTER> and then follow the screen prompts to enter and verify the password.

To set the password for serial access, select *11* at the **IP and Control Preferences** screen, press <ENTER> and then follow the screen prompts to enter and verify the password.

```

IP and Control Preferences Screen                                iConverter, Serial Agent

1: Set IP                                     192.168.1.220
2: Set Subnet Mask                           255.255.255.0
3: Set Gateway                               192.168.1.1
4: Chassis Number                            1
5: Chassis Name (also sysName)               GX/TM2
6: Enable/Disable TELNET                     Enabled
7: Enable/Disable FTP                        Disabled
8: Enable/Disable Soft Switch Reload         Disabled
9: TELNET Password                           *****
10: FTP Password                             *****
11: Serial Password                          *****

Enter Choice, Management Options Screen(0), (H)elp, E(x)it >

```

To save the new values, select *0* and press <ENTER> to return to the *Management Options* screen, then select *6* and press <ENTER> to *Save Preference Changes*.

### 3.4.2 Setting SNMP Preferences

To set the SNMP Preferences for the GX/TM2 module, select *4* from the *Management Options* screen, press <ENTER> to enter the *SNMP Preferences* screen.

```

Management Options                                              iConverter, Serial Agent

Network Management
1: Chassis and Module Management
2: Set Module Identifier

Management Module Preferences
3: IP and Control Preferences
4: SNMP Preferences
5: Abandon Preference Changes
6: Save Preference Changes
7: Restore to Factory Defaults
8: Restart Management Module
9: Other Networking Features

Management Module Maintenance
10: Firmware Update
11: Set Date/Time

IP Address      = 192.168.1.220
Chassis Number = 1

Enter Choice, (H)elp, E(x)it > 4

```



SNMP Preferences Screen		iConverter, Serial Agent	
Chassis Number	= 1	SNMP Engine ID	80001CAE03000687003B19
1: sysContact	Omnitron (949) 250-6510		
2: sysLocation	Irvine, CA USA		
3: SNMP Writes	Enabled		
SNMP v1/v2c -----			
4: Read Community	*****		
5: Write Community	*****		
6: Agent	Enabled		
SNMP V3 -----			
7: Agent	Enabled		
8: User 1 name (read only)	guest		
9: User 2 name (read/write)	admin		
10: User 1 Security	noAuthNoPriv	13: User 2 Security	noAuthNoPriv
11: User 1 Privacy pwd	*****	14: User 2 Privacy pwd	*****
12: User 1 Authen. pwd	*****	15: User 2 Authen. pwd	*****
Traps Hosts -----			
16: Address 1	255.255.255.255	20: Address 5	255.255.255.255
17: Address 2	255.255.255.255	21: Address 6	255.255.255.255
18: Address 3	255.255.255.255	22: Address 7	255.255.255.255
19: Address 4	255.255.255.255	23: Address 8	255.255.255.255
Enter Choice, Management Options Screen(0), (H)elp, E(x)it >			

### 3.4.2.1 Setting SNMPv1/v2c Read and Write Community Names

The GX/TM2 is shipped from the factory with the SNMP agent enabled with the default SNMP Read and Write Community name as “public”. See Section 3.4 for all factory default settings.

The SNMP Read Community Name is necessary for reading data from the GX/TM2. The name can be any 1-32 character alphanumeric string. To set the SNMP Read Community Name, select 4 at the **SNMP Preferences** screen, press <ENTER> and then follow the screen prompts.

The SNMP Write Community Name is necessary for writing data to the GX/TM2. The name can be any 1-32 character alphanumeric string. To set the SNMP Write Community Name, select 5 at the **SNMP Preferences** screen, press <ENTER> and then follow the screen prompts.

To save the new values, select 0 and press <ENTER> to return to the **Management Options** screen, then select 6 and press <ENTER> to **Save Preference Changes**.

### 3.4.2.2 Setting SNMPv3 Parameters

SNMPv3 implements a security model that provides for message integrity, authentication, and encryption. Authentication for SNMPv3 is provided through a unique User Name and Authentication Password for each access level.

Two access levels or accounts are available; Read-Only Level (User 1) and Read and Write Level (User 2). User 1 is allowed to request information from the module. User 2 is allowed to request information from and set configuration to the module. To set the User 1 name, select 8 at the **SNMP Preferences** screen, press <ENTER> and then follow the screen prompts. To set the User 2 name, select 9 at the **SNMP Preferences** screen, press <ENTER> and then follow the screen prompts. The GX/TM2 is shipped with default values pre-assigned. See Section 3.4 for all factory default settings.

The module supports the three levels of Authentication and Encryption (Security Levels) for User 1 and User 2; noAuthNoPriv, authNoPriv and authPriv. noAuthNoPriv uses username for authentication,

authNoPriv provides authentication based on the HMAC-MD5 algorithm and authPriv provides DES 56-bit encryption based on the HMAC-MD5 algorithm.

To set User 1 security, select *10* at the **SNMP Preferences** screen, press <ENTER> and then follow the screen prompts. To set the User 2 security, select *13* at the **SNMP Preferences** screen, press <ENTER> and then follow the screen prompts.

To set User 1 privacy password, select *11* at the **SNMP Preferences** screen, press <ENTER> and then follow the screen prompts. To set the User 2 privacy password, select *14* at the **SNMP Preferences** screen, press <ENTER> and then follow the screen prompts.

To set User 1 authentication password, select *12* at the **SNMP Preferences** screen, press <ENTER> and then follow the screen prompts. To set the User 2 authentication password, select *15* at the **SNMP Preferences** screen, press <ENTER> and then follow the screen prompts.

To save the new values, select *0* and press <ENTER> to return to the **Management Options** screen, then select *6* and press <ENTER> to **Save Preference Changes**.

Community name and User name can be any 1-32 character alphanumeric string

Authentication Password and Privacy Password can be any 1-16 character alphanumeric string.

#### **3.4.2.3 Setting the SNMP Trap IP Host Addresses**

SNMP traps are used to report events that occur during the operation of a network, and may require the attention of the network administrator. The GX/TM2 is capable of sending SNMP traps to up to eight different SNMP Traphosts.

To enter the IP address of the first Traphost Address, select *4* at the **Management Options** screen to access the **SNMP Preferences** screen. Select *16* at the **SNMP Preferences** screen and press <ENTER>. Then backspace over the existing value, type the new value (in x.x.x.x format), and press <ENTER>. To enter the IP addresses of additional trap-receiving Traphost Addresses, repeat this process for Traphost Addresses 2-8 (menu options 17-23).

To save the new values, select *0* and press <ENTER> to return to the **Management Options** screen, then select *6* and press <ENTER> to **Save Preference Changes**.

#### **3.4.2.4 Enabling/Disabling SNMPv1/v2c Agent**

To disable/enable SNMPv1/v2c agent, select *4* at the **Management Options** screen to access the **SNMP Preferences** screen. Select option *6* to disable/enable SNMPv1/v2c agent. When disabled, the module will not respond to any requests via the SNMPv1/v2c protocol.

#### **3.4.2.5 Enabling/Disabling SNMPv3 Agent**

To disable/enable SNMPv3 agent, select *4* at the **Management Options** screen to access the **SNMP Preferences** screen. Select option *7* to disable/enable SNMPv3 agent. When disabled, the module will not respond to any requests via the SNMPv3 protocol.

**Note: Both SNMPv1/v2c and SNMPv3 agents can be enabled at the same time.**

### 3.4.3 Enabling/Disabling Soft-switch Reload

The Soft-switch Reload function controls the configurations of the GX/TM2 and other *iConverter* modules managed by the GX/TM2 following a power up. To enable this feature, type 3 from the **Management Options** screen to access the **IP and Control Preferences** screen.

PI	SA
IP and Control Preferences Screen	
iConverter, Serial Agent	
1: Set IP	192.168.1.220
2: Set Subnet Mask	255.255.255.0
3: Set Gateway	192.168.1.1
4: Chassis Number	1
5: Chassis Name (also sysName)	GX/TM2
6: Enable/Disable TELNET	Enabled
7: Enable/Disable FTP	Disabled
8: Enable/Disable Soft Switch Reload	Disabled
9: TELNET Password	*****
10: FTP Password	
11: Serial Password	
Enter Choice, Management Options Screen(0), (H)elp, E(x)it >	

When the Soft-switch Reload is disabled, the configurations of the GX/TM2 and the other managed modules (non-management modules) are determined by their hardware DIP-switch settings following a return of power.

When the Soft-switch Reload is enabled, the configurations of the GX/TM2 and the other managed modules are determined by the previous software settings stored in the FLASH memory of the GX/TM2 following a return of power. Each of the hardware DIP-switch settings on the module are ignored until a change is made to the DIP-switch, then the hardware settings will take effect.

To set the Soft-switch Reload function, select 8 at the **IP and Control Preferences** screen, press <ENTER> and then follow the screen prompts to change the setting.

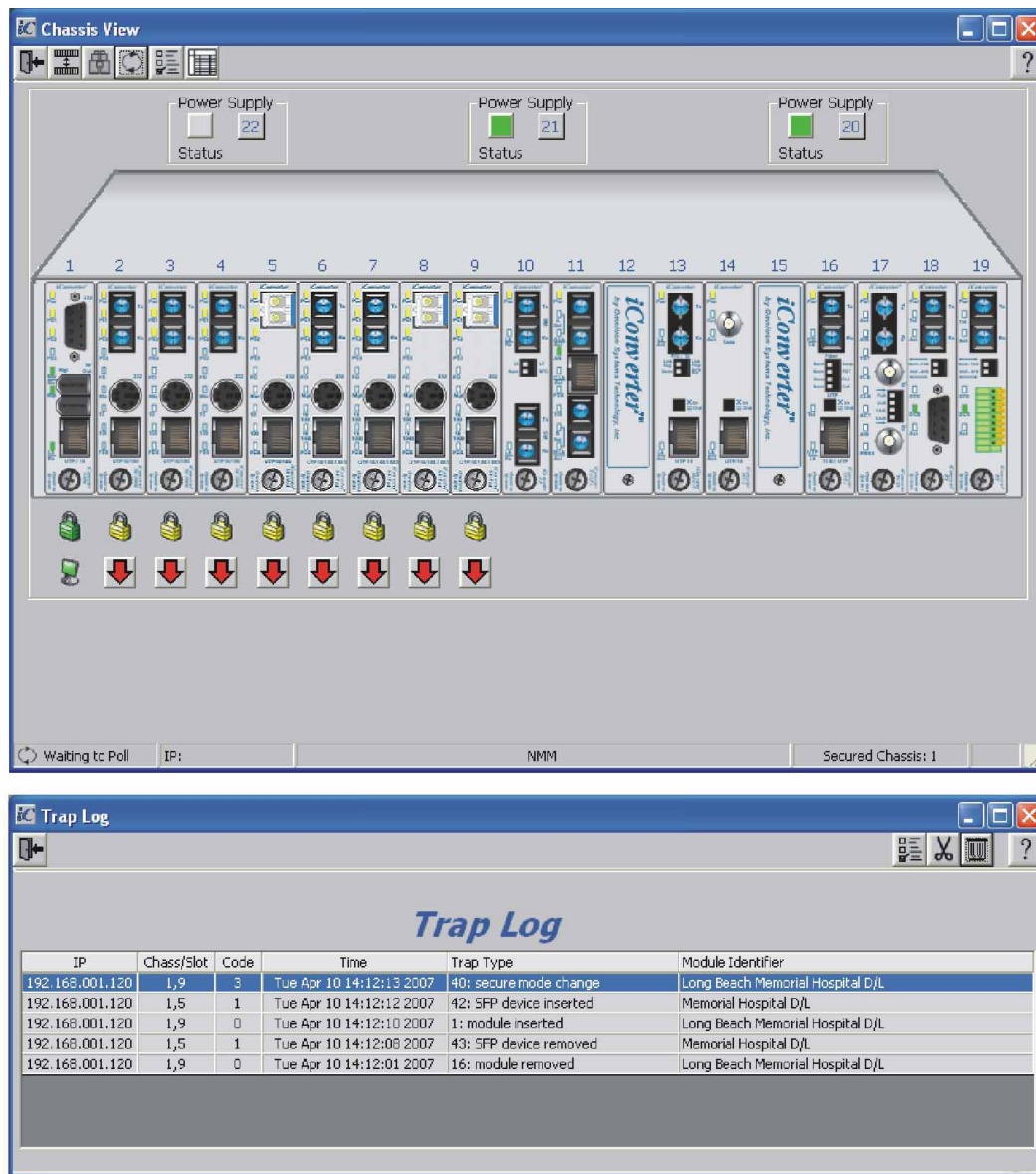
To save the new values, select 0 and press <ENTER> to return to the **Management Options** screen, then select 6 and press <ENTER> to **Save Preference Changes**.

### 3.4.4 Access the GX/TM2 Remotely

Remote access to the GX/TM2 is provided via SNMP, Telnet, FTP or an external serial modem connected to the Serial Console Port.

#### 3.4.4.1 Accessing the GX/TM2 via NetOutlook (SNMP)

The GX/TM2 module can be remotely accessed by SNMP-client software such as *NetOutlook* or third-party SNMP management software. See Setting SNMP Preferences Section 3.4.2, on how to configure the required parameters.



*NetOutlook Chassis View and Trap Log Screens*

#### 3.4.4.2 Accessing the GX/TM2 via Telnet

The GX/TM2 is shipped from the factory with Telnet enabled. The default Telnet password is "public". It is highly recommended that the network administrator set a new Telnet password in order to prevent unauthorized access to the unit. Telnet configuration parameters are available from the *IP and Control Preferences* screen, option 6.

```

IP and Control Preferences Screen                                iConverter, Serial Agent

1: Set IP                                192.168.1.220
2: Set Subnet Mask                       255.255.255.0
3: Set Gateway                           192.168.1.1
4: Chassis Number                        1
5: Chassis Name (also sysName)          GX/TM2
6: Enable/Disable TELNET                 Enabled
7: Enable/Disable FTP                    Disabled
8: Enable/Disable Soft Switch Reload    Disabled
9: TELNET Password                       *****
10: FTP Password
11: Serial Password

Enter Choice, Management Options Screen(0), (H)elp, E(x)it >6
Disable TELNET (Y/N)?>

```

To save the new values, select *0* and press <ENTER> to return to the *Management Options* screen, then select *6* and press <ENTER> to *Save Preference Changes*.

The GX/TM2 may be accessed and configured via Telnet using any standard Telnet client. Only one Telnet session can be active at a time. An inactive Telnet session terminates automatically after 5 minutes.

#### 3.4.4.3 Updating the GX/TM2 Firmware via the Serial Console Port

To update the GX/TM2 firmware from the Serial Console Port, select *10* at the *Management Options* screen, press <ENTER>. The GX/TM2 will display the following:

```

Management Options                                            iConverter, Serial Agent

Network Management
1: Chassis and Module Management
2: Set Module Identifier

Management Module Preferences
3: IP and Control Preferences
4: SNMP Preferences
5: Abandon Preference Changes
6: Save Preference Changes
7: Restore to Factory Defaults
8: Restart Management Module
9: Other Networking Features

Management Module Maintenance
10: Firmware Update
11: Set Date/Time

IP Address      = 192.168.1.220
Chassis Number = 1

Enter Choice, (H)elp, E(x)it > 10
UPDATE: Are you sure? (Y/N) > Y
Please Xmodem file now:

```

From the terminal program, use the Xmodem protocol to send the new GXTM-xxx.bin firmware file to the GX/TM2 module (where xxx represents the release level of the software).

Once the file transfer begins, the data uploads to the GX/TM2. The process takes about five minutes over a serial connection.

When the upload is complete, the GX/TM2 displays the update status and then automatically restarts with the newly loaded firmware.

#### **3.4.4.4 Updating the GX/TM2 Firmware via FTP**

Using an FTP application, upload the new firmware into the FTP root directory of the GX/TM2. When the file transfer is complete, the GX/TM2 verifies the file and then automatically restarts with the newly loaded firmware.

For detailed instructions on updating the management modules and other modules in the same chassis via FTP, download the application note “*iConverter* Management: Updating Modules via FTP” available on Omnitron’s web page:

<http://www.omnitron-systems.com/downloads.php>

To configure FTP, see Setting GX/TM2 Passwords Section 3.4.1.4.

### 3.5 VERIFYING OPERATION PI SA

Once the module has been installed and configured, per Sections 3.2 - 3.4, verify the module is operational by viewing the status of the LED indicators. The table below provides a description for each LED indicator.

The Power LED indicates the module is receiving power from the chassis or power cord. The plug-in module has an LED indicator for each available power supply in the chassis (the 19-Module Chassis has three, the 5-Module Chassis has two).

The Fiber Optic "FO" LED indicates the fiber optic connection between the modules has been established. A blinking LED indicates the presence of data.

The UTP LEDs indicate the module has established a connection across its UTP port. A blinking LED indicates the presence of data. See both tables to determine the UTP connection speed.

Refer to Section 6.0, Troubleshooting Guide, for help in determining possible fault conditions.

PI SA

PI

SA

LED Function "Legend"	Color	Off State	On / Blinking State	On / Blinking State
Power "Pwr"	Green	No power	On: Module has power	On: Module has power
Power Supply Status # X	Green	Chassis Power Supply not installed	On: Power available from installed Power Supply # X. Blinking: No power available from installed Power Supply # X	Not available on standalone
1000Mbps Fiber Optics "P1"	Green	No Fiber Link	On: Fiber Link Blinking: Fiber Data Activity	On: Fiber Link Blinking: Fiber Data Activity
Chassis Management Master/Slave "Msr/Slv"	Green	Chassis in Slave Mode	On: Chassis Master Mode Blinking: Operating in OAM Mode	Not available on standalone
UTP port 100Mbps "100"	Green	Not linked at 100Mbps	On: UTP linked at 100Mbps Blinking: UTP Data Activity	On: UTP linked at 100Mbps Blinking: UTP Data Activity
UTP port 1000Mbps "1000"	Green	Not linked at 1000Mbps	On: UTP linked at 1000Mbps Blinking: UTP Data Activity	On: UTP linked at 1000Mbps Blinking: UTP Data Activity
UTP port 10Mbps "100" + "1000"	Green	Not linked at 10Mbps	On: UTP linked at 10Mbps Blinking: UTP Data Activity	On: UTP linked at 10Mbps Blinking: UTP Data Activity
UTP port Full-Duplex "FDX"	Green	Half-Duplex when any UTP link is active	On: Full-Duplex when any UTP link is active	On: Full-Duplex when any UTP link is active

LED Legend/State		UTP Link Speed
"1000"	"100"	
OFF	OFF	UTP Not Linked
OFF	ON	UTP Linked at 100Mbps
ON	OFF	UTP Linked at 1000Mbps
ON	ON	UTP Linked at 10Mbps



## 4.0 DETAILED MODULE CONFIGURATION PI SA

### 4.1 OVERVIEW

The GX/TM2 has module parameters that require configuration depending on the application. The *Module* configuration screen is accessible by selecting the module slot number from the *Chassis View* screen. To access the *Module* configuration menu, select *1* at the *Management Options* screen, press <ENTER>. The *Chassis Selection* screen will be displayed. From the *Chassis Selection* screen, select the chassis number where the GX/TM2 module is installed.

**NOTE:** Module configuration is also available using *NetOutlook*.

PI

Chassis Selection		iConverter, Serial Agent
Number	Chassis Name	
1	NMM	
2	Not Available	
3	Not Available	
4	Not Available	
5	Not Available	
6	Not Available	
7	Not Available	
8	Not Available	
9	Not Available	
10	Not Available	
11	Not Available	
12	Not Available	
13	Not Available	
14	Not Available	
15	Not Available	
16	Not Available	
17	Not Available	
18	Not Available	
19	Not Available	
Connected to Chassis Number 1		
Chassis Number(1-19), Management Options(0), (H)elp, E(x)it > 1		

By selecting Chassis Number 1, from the *Chassis Selection* screen, the *Chassis View* screen will be displayed.



**PI**

```

Chassis View 19 Slot                                iConverter, Serial Agent

Chassis Number = 1

Slot  Model      Type                                Slot Model      Type
1      8000-0      NMM                                16     N/A
2      8903-1      10/100M                               17     N/A
3      8911-1      10/100M                               18     N/A
4      N/A                                                19     N/A
5      8923N-1    GX/TM2                               20     N/A
6      N/A                                                21     8200-9    Power Supply
7      N/A                                                22     N/A
8      N/A
9      N/A
10     N/A
11     N/A
12     N/A
13     N/A
14     N/A
15     N/A

Module to View(1-22), Chassis Selection(0), (R)eset, (H)elp, E(x)it > 5

```

**SA**

```

Chassis View 1 Slot                                iConverter, Serial Agent

Chassis Number = 1

Slot  Model      Type                                Module Identifier
1      8923N-1      GX/TM2

Module to View(1), Management Options(0), (R)eset, (H)elp, E(x)it >1

```

From the **Chassis View** menu, select the desired module (select *1* or *5*), press **<ENTER>**. The **Module** configuration screen will be displayed.

```

Module - iConverter GX/TM2                               iConverter, Serial Agent
Identifier -

Chassis Number      = 1          Switch  ON Condition  OFF Condition  H/W    Actual
Slot Number         = 7          1: Port 1 Manual   Port 1 AN      Off     Off
Model Number        = 8939N-0    2: Port 2 Manual   Port 2 AN      Off     Off
Serial Number       = xxxxxxxx   3: Port 2 10/100   Port 2 1000    Off     Off
Manufacturing Date  = xxxxxxxx   4: Port 2 10       Port 2 100     Off     Off
Product Revision    = xx         5: Port 2 HDX      Port 2 FDX     Off     Off
Software Revision   = xx         6: Link Propagate  Link Segment   Off     Off
LED                                                         7: Remote Fault  Normal        Off     Off
1: Power            = On         8: Symm Fault Det Normal          Off     Off
2: Power Supply 1   = Off        9: BP A Enabled   BP A Disabled  On      On
3: Power Supply 2   = On         10: BP B Enabled  BP B Disabled  On      On
4: Power Supply 3   = Off        11: Slave Only    Master/Slave    Off     Off
5: Port 1 Link      = Off        12: Not Available
6: BP Master        = On         Configuration Setting
7: UTP 100+10 Link = Off        13: Pause Function Disabled
8: UTP 1000+10 Link= Off        14: Not Available
9: UTP FDX          = Off        15: Not Available
                                16: Not Available
                                17: IP Protocol State Off
                                18: Management Mode   ah OAM
Toggle Switch(1-16), (I)dentifier, (R)eset, (H)elp, (P)ortStat, Port(C)tl >

```

The **Module** configuration screen provides general information concerning the configuration and status of the module. The screen displays the model and serial numbers, hardware and software revisions, as well as the condition of the LEDs and DIP-switches. The DIP-switches can be re-configured (options 1 -11) without removing the module from the chassis. Select the appropriate option to change the DIP-switch setting. Selecting DIP-switch options 1 - 11, will cause the selection to change states under the ‘Actual’ heading.

**NOTE: The Plug-In Module configuration screen is shown. The standalone Module configuration screen will display LED 2, 3, 4, and 6 and DIP-switches 9, 10 and 11 as NOT AVAILABLE.**

#### 4.1.1 Pause Setting (Configuration Setting 13)

The Pause Function switch sets the flow control functionality for the module, including pause mode advertisement, pause functionality, and half duplex jam. When set to Enable, flow control functionality is enabled. When set to Disable, flow control functionality is disabled.

If Pause is Enabled on the module and the port is in half duplex then half duplex flow control is enabled. When a port is in half duplex flow control it generates a “jam” signal when a collision is detected.

If Pause is Enabled on the module and the port is in full duplex then full duplex flow control is enabled. When a port is in full duplex flow control and internal buffering resources are low a pause frame is generated to slow down the traffic flow to the port.

### 4.1.2 Module Management Mode (Configuration Setting 17 and 18)

From the **Module** configuration screen, the management mode can be changed. Select option *18* to change the mode. The management mode options will be displayed.

PI

```

Module - iConverter GX/TM2                                iConverter, Serial Agent
Identifier -

Chassis Number      = 1          Switch  ON Condition    OFF Condition  H/W    Actual
Slot Number         = 7          1: Port 1 Manual   Port 1 AN      Off     Off
Model Number        = 8939N-0    2: Port 2 Manual   Port 2 AN      Off     Off
Serial Number       = xxxxxxxxx  3: Port 2 10/100   Port 2 1000    Off     Off
Manufacturing Date = xxxxxxxxx  4: Port 2 10       Port 2 100     Off     Off
Product Revision    = xx        5: Port 2 HDX      Port 2 FDX     Off     Off
Software Revision   = xx        6: Link Propagate  Link Segment   Off     Off
                        7: Remote Fault  Normal        Off     Off
                        8: Symm Fault Det Normal         Off     Off
LED
1: Power            = On        9: BP A Enabled    BP A Disabled  On      On
2: Power Supply 1   = Off       10: BP B Enabled   BP B Disabled  On      On
3: Power Supply 2   = On        11: Slave Only     Master/Slave    Off     Off
4: Power Supply 3   = Off       12: Not Available
5: Port 1 Link      = Off       Configuration Setting
6: BP Master        = On        13: Pause Function Disabled
7: UTP 100+10 Link = Off       14: Not Available
8: UTP 1000+10 Link= Off       15: Not Available
9: UTP FDX          = Off       16: Not Available
                        17: IP Protocol State Off
                        18: Management Mode  ah OAM
Toggle Switch(1-16), (I)dentifier, (R)eset, (H)elp, (P)ortStat, Port(C)tl >
Mode (1=OAM Off, 2=Auto Secure OAM, 3=Auto ah OAM, 4=Secure OAM, 5=ah OAM): 3

```

The GX/TM2 module supports several management options. Option *18* configures how the module will communicate to its remote partner. ‘Auto Secure OAM’ (option 2) and ‘Secure OAM’ (option 4) uses Omnitron’s proprietary secure encrypted management channel. ‘Auto Secure OAM’ will force the remote partner to communicate using the Secure OAM protocol while ‘Secure OAM’ will only attempt to communicate with the remote partner over the secure protocol. The management channel can support IP or IP-less connectivity based on the configuration of the ‘IP Protocol State’, option *17*. ‘Auto ah OAM’ (option 3) and ‘ah OAM’ (option 5) conforms to the IEEE 802.3ah specification. ‘Auto ah OAM’ will force the remote partner to communicate using the ah OAM protocol while ‘ah OAM’ will only attempt to communicate with the remote partner over the ah protocol. This option provides an industry standard method of fault detection and monitoring. The management channel supports both IP and IP-less connectivity based on the configuration, option *17* and *18*.

**NOTE:** See the *NetOutlook* user manual for complete information on the management modes.

## 4.2 PORT CONFIGURATION

The **Port** configuration screen provides access to the port level configuration parameters, such as, Port Access, Bandwidth Control, L2CP Control, SFP Information, 802.3ah, Port VLANs, Tagged VLANs and cNode Loopback. To access the **Port** configuration screen, select **C** from the **Module** configuration screen and press <ENTER>. The **Port** configuration screen will appear.

PI

```
Module - iConverter GX/TM2                               iConverter, Serial Agent
Identifier -

Chassis Number      = 1                                Port Access Control Setup
Slot Number         = 7                                -----
Model Number        = 8939N-0                          11: Fiber          Enable          On
                                                         12: UTP            Enable          On

Feature Selection
-----
1: 802.1Q Processing Enable   Off
2: Configure Tag VLAN Control
3: Configure VLAN Membership
4: Save TAG VLAN Parameters
5: Configure 802.3ah Parameters
6: Configure 802.3ah Events
7: SFP Information
8: Bandwidth Control
9: L2CP Control
10: cNode Loopback

Port VLAN Path Setup
-----
13: Fiber to UTP          Enable   On
14: Fiber to BP A         Enable   On
15: Fiber to BP B         Enable   On
16: UTP to BP A           Enable   On
17: UTP to BP B           Enable   On
18: BP A to BP B          Enable   On
19: Fiber to Mngmnt        Enable   On
20: UTP to Mngmnt          Enable   On
21: BP A to Mngmnt         Enable   On
22: BP B to Mngmnt         Enable   On

Enter Choice, Previous Screen(0), (H)elp, E(x)it >
```

SA

```
Module - iConverter GX/TM2                               iConverter, Serial Agent
Identifier -

Chassis Number      = 1                                Port Access Control Setup
Slot Number         = 7                                -----
Model Number        = 8939N-0                          11: Fiber          Enable          On
                                                         12: UTP            Enable          On

Feature Selection
-----
1: 802.1Q Processing Enable   Off
2: Configure Tag VLAN Control
3: Configure VLAN Membership
4: Save TAG VLAN Parameters
5: Configure 802.3ah Parameters
6: Configure 802.3ah Events
7: SFP Information
8: Bandwidth Control
9: L2CP Control
10: cNode Loopback

Port VLAN Path Setup
-----
13: Fiber to UTP          Enable   On
14: Fiber to Mngmnt        Enable   On
15: UTP to Mngmnt          Enable   On

Enter Choice, Previous Screen(0), (H)elp, E(x)it >
```

### 4.2.1 Port Access

The Port Access option allows the ports to be disabled/enabled while maintaining the port configuration and network link

To configure Port Access, select option *11* for the Fiber port and option *12* for the UTP port from the **Port** configuration screen.

### 4.2.2 Bandwidth Control

The GX/TM2 Bandwidth Control is accessed by selecting option 8 at the **Port** configuration screen.

The GX/TM2 provides separate ingress and egress rate control on each port.

Ingress rates are limited by Committed Information Rate (CIR) and Committed Burst Size (CBS). The committed information rate (CIR) is the rate at which the network supports data transfer under normal operations. The committed burst size (CBS) defines the number of bytes that can transmit over a specified time interval when congestion is occurring. Ingress CIR values are entered as a number of kbps, ranging from 64kbps to 1,000,000kbps. CIR values will be rounded to the nearest 64k. CBS values can range from 5kB to 150kB.

Egress rate are selected from a menu of 20 options.

Egress rate limiting can be selected to use either Starvation Queuing (low latency) or Weighted Fair Queuing (high latency). Starvation Queuing processes all high priority traffic before any low priority traffic and uses a strict priority scheme. Weighted Fair Queuing will process high priority traffic more often than low priority traffic in an 8 (high priority), 4, 2, 1 (low priority) weighted scheme.

PI SA

```
Bandwidth Control - iConverter GX/TM2          iConverter Serial Agent
Identifier -

Chassis Number      = 1
Slot Number         = 1
Model Number        = 8939N-0

          Fiber Control
-----
1: Ingress CIR      1,000,000 kbps
2: Ingress CBS      150 kB
3: Egress rate      1000 Mbps
4: Queueing         Fair Weight

          UTP Control
-----
5: Ingress CIR      1,000,000 kbps
6: Ingress CBS      150 kB
7: Egress rate      1000 Mbps
8: Queueing         Fair Weight

Enter Choice, Previous Screen(0), (H)elp, E(x)it >
```

To change the ingress rate of the fiber port, select option *1*.

```
Change Fiber CIR (range 64 to 1000000)> 1000000
```

To change the ingress rate of the UTP port, select option *5*.

```
Change UTP CIR (range 64 to 1000000)> 1000000
```

To change the egress rate, select option 3 for the fiber port or option 7 for the UTP port. The egress rates are displayed. Select the desired egress rate.

PI SA

```

Bandwidth Control - iConverter GX/TM2          iConverter, Serial Agent
Identifier -

Chassis Number      = 1
Slot Number         = 12
Model Number        = 8939N-0

Fiber Controls
-----
1: Ingress CIR      1,000,000 kbps
2: Ingress CBS      150 kB
3: Egress rate      600 Mbps
4: Queueing         Fair Weight

UTP Controls
-----
5: Ingress CIR      1,000,000 kbps
6: Ingress CBS      150 kB
7: Egress rate      600 Mbps
8: Queueing         Fair Weight

1: 64 Kbps      17: 30 Mbps
2: 128 Kbps     18: 40 Mbps
3: 256 Kbps     19: 50 Mbps
4: 512 Kbps     20: 60 Mbps
5: 768 Kbps     21: 70 Mbps
6: 1 Mbps       22: 80 Mbps
7: 2 Mbps       23: 90 Mbps
8: 3 Mbps       24: 100 Mbps
9: 4 Mbps       25: 200 Mbps
10: 5 Mbps      26: 300 Mbps
11: 6 Mbps      27: 400 Mbps
12: 7 Mbps      28: 500 Mbps
13: 8 Mbps      29: 600 Mbps
14: 9 Mbps      30: 700 Mbps
15: 10 Mbps     31: 800 Mbps
16: 20 Mbps     32: 900 Mbps
                33: 1000 Mbps

Select Fiber Egress Rate from menu above (1-33) > 29

```

### 4.2.3 Layer 2 Control Protocol Filter

Layer 2 Control Protocol Filter provides the ability to forward, discard or tunnel L2CP frames based on the network requirements. Select 'forward', 'discard' or 'tunnel' for each of the ports .

The Layer 2 Control Protocol Filter is accessed by selecting option 9 from the **Port** configuration screen.

PI

```

L2CP Control - iConverter GX/TM2          iConverter, Serial Agent
Identifier -

Chassis Number = 1      Slot Number = 1      Model Number = 8939N-0

1: Fiber L2CP Ingress Control      Forward
2: UTP L2CP Ingress Control        Forward
3: BP A L2CP Ingress Control       Forward
4: BP B L2CP Ingress Control       Forward

Enter Choice, Previous Screen(0), (H)elp, E(x)it >

```

```

L2CP Control - iConverter GX/TM2                               iConverter, Serial Agent
Identifier -

Chassis Number = 1      Slot Number = 1      Model Number = 8939N-0

1: Fiber L2CP Ingress Control      Forward
2: UTP   L2CP Ingress Control      Forward

Enter Choice, Previous Screen(0), (H)elp, E(x)it >

```

Select the appropriate option to configure the module for the desired operation.

#### 4.2.4 SFP Information

The GX/TM2 module installed with an SFP will provide general and specific information on the SFP. This information is best viewed with SNMP management software. The following is the information available:

##### 4.2.4.1 SFP A0 Information Display

This section displays fixed SFP Module information for the following areas.

- Identifier Values
- Connector Values
- Encoding Rules
- Link Length
- Vendor OUI
- Laser Wavelength
- Vendor Serial Number
- Diagnostic Monitoring Type
- SFF-8472 Compliance
- Extended Identifier
- Transceiver Codes
- Normal Bit Rate
- Vendor Name
- Vendor Revision Number
- Options
- Date Code
- Enhanced Options

##### 4.2.4.2 SFP A2 Information Display

This section displays decoded SFP data collected for the following statistics.

- Measured Temperature
- Measured Bias
- Measured Rx Power
- Temperature Low Alarm Setting
- Temperature Low Warning Setting
- Vcc Low Alarm Setting
- Vcc Low Warning Setting
- Bias Low Alarm Setting
- Bias Low Warning Setting
- Tx Power Low Alarm Setting
- Tx Power Low Warning Setting
- Rx Power Low Alarm Setting
- Rx Power Low Warning Setting
- Measured Vcc
- Measured Tx Power
- Temperature High Alarm Setting
- Temperature High Warning Setting
- Vcc High Alarm Setting
- Vcc High Warning Setting
- Bias High Alarm Setting
- Bias High Warning Setting
- Tx Power High Alarm Setting
- Tx Power High Warning Setting
- Rx Power High Alarm Setting
- Rx Power High Warning Setting

SFP information can be obtained by selecting option 7 from the **Port** configuration screen.

```
SFP Information - iConverter GX/TM2                      iConverter, Serial Agent
Identifier -
Chassis Number = 1    Slot Number = 2    Model Number = 8939N-0    Port = 1
```

## Address A0 Page Contents

```
=====
00: 03 04 07 00 10 02 00 00 00 00 01 03 00 14 C8 .....
10: 37 37 00 00 43 4F 52 45 54 45 4B 20 20 20 20 77..xxxxxxx
20: 20 20 20 20 00 00 00 00 43 54 2D 30 31 35 35 53 ....xxxxxxx
30: 53 50 2D 4D 42 35 4C 44 30 30 30 05 1E 00 84 xxxxxxxxxxxxxx....
40: 00 1A 00 00 41 31 36 37 45 43 35 30 30 30 30 30 ....A167EC500000
50: 36 20 20 20 30 35 31 32 30 37 20 20 68 90 01 A4 6  051207 h...
60: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF .....
70: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF .....
80: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF .....
90: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF .....
A0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF .....
B0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF .....
C0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF .....
D0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF .....
E0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF .....
F0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF .....
```

Enter Previous Screen(0), (n)ext page, (H)elp, E(x)it > n

```
SFP Information - iConverter GX/TM2                      iConverter, Serial Agent
Identifier -
Chassis Number = 1    Slot Number = 2    Model Number = 8939N-0    Port = 1
```

## Address A2 Page Contents

```
=====
00: 64 00 F6 00 5A 00 FB 00 8C A0 75 30 88 B8 79 18 d...Z.....u0..y.
10: 9C 40 03 E8 88 B8 07 D0 09 D0 00 FB 07 CB 01 3C .@.....<
20: 18 A6 00 05 13 94 00 06 00 00 00 00 00 00 00 .....
30: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
40: 00 00 00 00 3F 80 00 00 00 00 00 00 01 00 00 00 ....?.....
50: 01 00 00 00 01 00 00 00 01 00 00 00 00 00 00 AE .....
60: 24 A8 80 78 17 14 03 F0 00 00 00 00 00 02 F8 $.x.....
70: 00 40 00 00 00 40 00 00 00 00 00 00 00 00 00 .@...@.....
80: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF .....
90: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF .....
A0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF .....
B0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF .....
C0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF .....
D0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF .....
E0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF .....
F0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF .....
```

Enter Previous Screen(0), (b) previous page, (H)elp, E(x)it >



#### 4.2.5 802.3ah Parameters

The 802.3ah parameters can be monitored and/or configured in the *802.3ah Control* screen.

- 802.3ah OAM State - The 802.3ah OAM State turns 802.3ah processing on or off for the selected port. When the port is configured as “Disabled” it will not respond to OAMPDUs (OAM Protocol Data Units). They will be dropped by the processor and not acted upon. When the port is configured as “Enabled”, it will respond to and be involved in the Discovery process and other supported 802.3ah OAM functions.
- 802.3ah OAM Mode - The 802.3ah OAM Mode sets the selected port to “Passive” or “Active” configuration mode. In “Passive” mode the port cannot initiate Discovery, send Variable Requests or initiate Loopback Mode. It can observe and report only the port status of its 802.3ah enabled remote partner. An “Active” port can initiate Discovery, send Variable Requests and initiate loopback mode.
- Loopback Mode - The Loopback Mode turns loopback operations “On” or “Off”. When Loopback Mode is set to “Off”, the port of the 802.3ah enabled local device will not initiate Loopback operations. It can respond to loopback commands from its 802.3ah enabled remote partner if set to “Passive” or “Active” OAM Mode. When Loopback Mode is set to “On”, the port of the 802.3ah enabled local device will initiate Loopback operations and set the 802.3ah enabled remote partner into loopback. In this mode, the 802.3ah enabled local device will not respond to any other configuration changes until its port is set to “Off.”
- Loopback Mode Timeout (sec) - The Loopback Mode Timeout field controls the length of time that the port will be set to Loopback “On” mode. Loopback can be set between 0 and 300 seconds. The 0 setting disables the timer.
- Unidirectional Mode - OAM provides a mechanism to notify the remote link partner when one direction of a link is non-operational and therefore data transmission is disabled. The ability to operate a link in a unidirectional mode for diagnostic purposes supports the maintenance objective of failure detection and notification. The 802.3ah unidirectional link can be enabled on the fiber port. Unidirectional fiber link allows a fiber port to send link fault OAMPDUs when a link fault is detected.

##### 4.2.5.1 Local Status Section

The Local Status section displays the status of the Fiber and UTP ports of the 802.3ah enabled local device. The local device is controlled directly by SNMP, Telnet or via the Serial Port and has the ability to communicate with an 802.3ah enabled remote partner.

- Discovery State - Indicates the Discovery state (“Complete”, “In Process” or “Incomplete”) of the local ports. If “Complete” is displayed, Discovery has been completed. If “In Process”, Discovery has been initiated but no response from the 802.3ah enabled remote partner has been received by the local device. If “Incomplete”, Discovery has received a response from the 802.3ah enabled remote partner but the Discovery process is not yet completed.
- Multiplexer State - Indicates the Multiplexer state (“Discard” or “Forward”) of the local ports. If “Forward” is displayed, the local device is forwarding non-OAMPDU network frames to the **lower** sublayer. If “Discard”, the local device is discarding non-OAMPDU network frames.
- Parser Action - Indicates the Parser Action (“Discard”, “Forward” or “Loopback”) of the local ports. If “Forward” is displayed, the local device is forwarding non-OAMPDU network frames to the **higher** sublayer. If “Loopback”, the local device is looping back non-OAMPDUs network frames. If “Discard”, the device is discarding non-OAMPDUs network frames.

##### 4.2.5.2 Remote Status Section

The Remote Status section displays the status of the ports of the 802.3ah enabled remote partner. These

remote ports are connected to the Fiber and UTP ports of the local device. The remote partner is managed by the local device via the 802.3ah OAM channel.

- Discovery State - Indicates the Discovery state (“Complete”, “In Process” or “Incomplete”) of the remote ports. If “Complete” is displayed, Discovery has been completed. If “In Process”, Discovery has been initiated but no response from the local device has yet been received by the remote partner. If “Incomplete”, Discovery is in process, but is not yet completed.
- Multiplexer State - Indicates the Multiplexer state (“Discard”, “Forward” or “Unknown”) of the remote ports. If “Forward” is displayed, the remote partner is forwarding non-OAMPDUs to the **lower** sublayer. If “Discard”, the remote partner is discarding non-OAMPDUs network frames. If “Unknown”, the Multiplexer state of the remote partner is indeterminate.
- Parser Action - Indicates the Parser Action state (“Discard”, “Forward” or “Loopback”) of the remote ports. If “Forward” is displayed, the remote partner is forwarding non-OAMPDUs network frames to the **higher** sublayer. If “Loopback” is displayed, the remote partner is looping back non-OAMPDUs network frames. If “Discard” is displayed, the remote partner is discarding non-OAMPDUs network frames.
- Critical Event - Indicates the Critical Event state (“Yes” or “No”) of the remote partner. If “Yes” is displayed, the local device has detected a Critical Event. If “No”, the local device has not detected a critical event.
- Link Fault - Indicates the remote partner has detected a fault in the receive direction (“Yes” or “No”). If “Yes” is displayed, the receive link is down. If “No”, the receive link is up.
- OAM Mode - Indicates the OAM mode (“Active” or “Passive”) of the remote partner.
- Supports - Indicates the supported options (Variable Access “Var”, Link Event Notification “Events”, Loopback “LB” or blank if no options are supported) of the remote partner.
- OUI - Indicates the three hex byte IEEE organizational specific identifier (or blank if unknown) of the remote partner.

802.3ah parameters can be accessed by selecting options 5 from the **Port** configuration screen. The fiber configuration screen is displayed.

```

802.3ah Control - iConverter GX/TM2                      iConverter, Serial Agent
Identifier -
Chassis Number = 1    Slot Number = 7    Model Number = 8939N-0    Port = 1

1: 802.3ah OAM State      Enabled      Local Status
2: OAM Mode               Active        Discovery State           Incomplete
3: Loopback Mode          Disabled    Multiplexer State        Forward
4: Loopback Timeout       30 sec     Parser Action            Forward
5: Unidirectional Mode    Disabled

Remote Status
Discovery State           Incomplete
Critical Event            No
Link Fault                No
Multiplexer State         Unknown
Parser Action             Unknown
Mode                      Unknown
Supports                  Unknown
OUI:                      Unknown

Enter, Previous Screen (0), (n)ext page, (H)elp, E(x)it >

```

To configure the 802.3ah parameters for the UTP port, type an *n* and press <ENTER>.

#### 4.2.6 802.3ah Events

802.3ah events can be accessed by selecting options 6 from the **Port** configuration screen.

```

802.3ah Event - iConverter GX/TM2                      iConverter, Serial Agent
Identifier -
Chassis Number = 1    Slot Number = 1    Model Number = 8923N-1

Port 1
1: Symbol Period Window      0 second      <    0    symbols>
2: Symbol Period Threshold   0 symbols
3: Frame Window              0 seconds
4: Frame Threshold           0 frames
5: Frame Period Window       0 second      <    0    frames>
6: Frame Period Threshold    0 frames
7: Frame Seconds Summary Window 0 seconds
8: Frame Seconds Summary Threshold 0 seconds

Port 2
9: Symbol Period Window      0 second      <    0    symbols>
10: Symbol Period Threshold   0 symbols
11: Frame Window              0 seconds
12: Frame Threshold           0 frames
13: Frame Period Window       0 second      <    0    frames>
14: Frame Period Threshold    0 frames
15: Frame Seconds Summary Window 0 seconds
16: Frame Seconds Summary Threshold 0 seconds

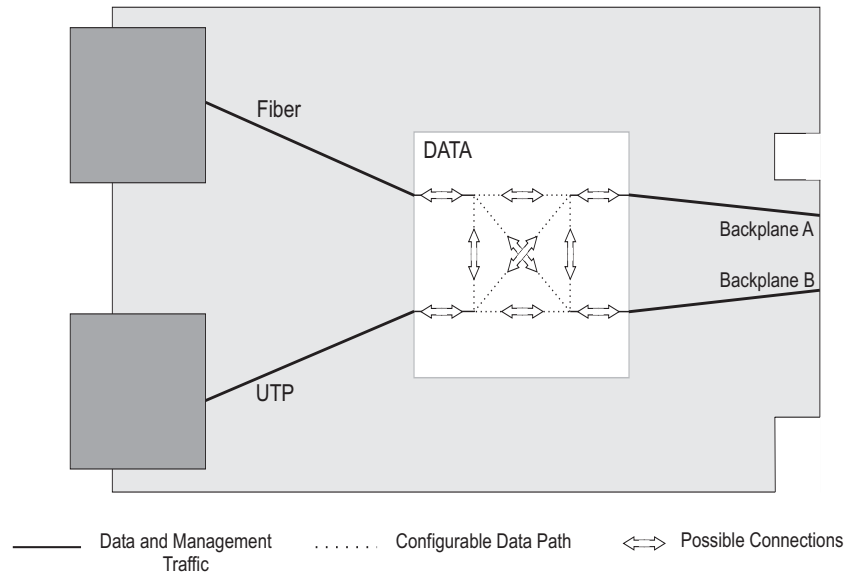
Enter Choice, Previous Screen(0), (H)elp, E(x)it >

```

#### 4.2.7 Port VLAN

The flow of data on the module is controlled by configuring the Port VLAN settings. The block diagram below illustrates the flow of both the management traffic and the data traffic for a plug-in module (standalone modules do not have backplane access). The data traffic is controlled by a switch matrix which provides complete control of the data traffic. The management traffic is simply enabled or disabled at each port. By default traffic flows between all ports on the module.

Using the Port VLAN settings, data will only be forwarded across the enabled path, unless blocked by one of the other features (Port Access or Tag VLAN). Secure OAM and ah OAM Management data will pass to and from the Management port even if the path has been “disabled”. This allows OAM maintenance functions to always be enabled. Port VLAN control is inactive when Tag VLAN processing is turned on.



***Port VLAN Block Diagram***

Port VLAN is access by selecting options 13 - 22 or 13 - 15 depending on the module type; plug-in or standalone.

PI

```
Module - iConverter GX/TM2                      iConverter, Serial Agent
Identifier -

Chassis Number      = 1                      Port Access Control Setup
Slot Number         = 7                      -----
Model Number        = 8939N-0                11: Fiber      Enable      On
                                           12: UTP        Enable      On

      Feature Selection
-----
1: 802.1Q Processing Enable  Off
2: Configure Tag VLAN Control
3: Configure VLAN Membership
4: Save TAG VLAN Parameters
5: Configure 802.3ah Parameters
6: Configure 802.3ah Events
7: SFP Information
8: Bandwidth Control
9: L2CP Control
10: cNode Loopback

Port VLAN Path Setup
-----
13: Fiber  to UTP      Enable  On
14: Fiber  to BP A     Enable  On
15: Fiber  to BP B     Enable  On
16: UTP    to BP A     Enable  On
17: UTP    to BP B     Enable  On
18: BP A   to BP B     Enable  On
19: Fiber  to Mngmnt   Enable  On
20: UTP    to Mngmnt   Enable  On
21: BP A   to Mngmnt   Enable  On
22: BP B   to Mngmnt   Enable  On

Enter Choice, Previous Screen(0), (H)elp, E(x)it >
```

SA

```
Module - iConverter GX/TM2                      iConverter, Serial Agent
Identifier -

Chassis Number      = 1                      Port Access Control Setup
Slot Number         = 7                      -----
Model Number        = 8939N-0                11: Fiber      Enable      On
                                           12: UTP        Enable      On

      Feature Selection
-----
1: 802.1Q Processing Enable  Off
2: Configure Tag VLAN Control
3: Configure VLAN Membership
4: Save TAG VLAN Parameters
5: Configure 802.3ah Parameters
6: Configure 802.3ah Events
7: SFP Information
8: Bandwidth Control
9: L2CP Control
10: cNode Loopback

Port VLAN Path Setup
-----
13: Fiber  to UTP      Enable  On
14: Fiber  to Mngmnt   Enable  On
15: UTP    to Mngmnt   Enable  On

Enter Choice, Previous Screen(0), (H)elp, E(x)it >
```

## 4.2.8 Tagged VLAN

The GX/TM2 supports the IEEE 802.1Q tag VLAN packet tagging and un-tagging (including Q-in-Q multi-tagging) and the 802.1p Quality of Service priority standards.

The following parameters are configured for each port:

### 4.2.8.1 Port Priority (PRI)

This (IEEE 802.1p based) user-specified value of 0 through 7 can be assigned as a QoS priority level (0 being lowest and 7 being highest) to packets ingressing (entering) a port. If no value is specified by the user, a default priority value of “0” is assigned.

The PRI value is always assigned to all untagged packets. Tagged packets are assigned the PRI value when the “PVID” option is selected in the “Tagged Packet Use” section.

### 4.2.8.2 Port VLAN ID (PVID)

This (IEEE 802.1Q based) user-specified value of 0 through 4094 can be assigned as a Port VLAN ID (PVID) to packets ingressing a port. If no value is specified by the user a default PVID value of “2” is assigned.

The PVID value is always assigned to untagged packets. Tagged packets are assigned the PVID value when the “PVID” option is selected in the “Tagged Packet Use” section.

### 4.2.8.3 Tagged Packet Use

This section defines how tagged packets ingressing a port are processed.

Selecting the “PVID” option causes the PRI and PVID user-specified values to be used as the packet’s VLAN ID (VID) for processing of the packet.

Selecting the “TVID” (Tagged VLAN ID) option causes the packet’s original Tag VLAN ID (TVID) and priority level to be used as the packet’s VLAN ID (VID) for processing of the packet.

NOTE: Untagged packets are always assigned the port’s PRI and PVID values as their VID.

### 4.2.8.4 Ingress Security

This section selects the ingress security level of a port.

Selecting the “**Low**” option allows any packet to ingress a port.

Selecting the “**High**” option allows only packets that are assigned a VLAN ID (VID) value of which this port is a member (according to the Membership Table) to ingress a port.

### 4.2.8.5 Port Type

This section defines the port type.

Selecting the “**Tunnel**” option, sets the egress mode to “Pass” for each VID assigned to the port in the membership table. The port is set to “Accept Tagged” frames.

Selecting the “**Trunk**” option, the port is set to a Egress Tag Mode of “Provider Tag”. Frames ingressing will have the “Provider Tag” removed.

Selecting the “**Access**” option, sets the egress mode to “Pass” for each VID assigned to the port in the membership table. The port is set to “Discard Tagged” frames.

### 4.3.8.6 Global Settings

The GX/TM2 allows the setting of the customer facing port (C-TAG) and the network facing port (S-TAG). C-Tag is used by the port when Port Type is set to “Access” or “Tunnel”. The C-Tag defaults to 0x8100h. S-TAG is used by the port when Port Type is set to “Trunk”. The S-Tag defaults to 0x8100h. If the S-Tag is changed the port functions as an IEEE 802.1ad S-Tag port.

Tagged VLAN is accessed by selecting option 2 from the **Port** configuration screen. The **Tag VLAN Control** screen will be displayed.

```

Tag VLAN Control - iConverter GX/TM2                               iConverter, Serial Agent
Identifier -
Chassis Number = 1      Slot Number = 1      Model Number = 8939N-0

Fiber1: Port Priority (PRI)      0      BP B  16: Port Priority (PRI)      0
      2: PVID (Port VLAN ID)    2      17: PVID (Port VLAN ID)    2
      3: Tagged Packets Use      PVID    18: Tagged Packets Use      PVID
      4: Ingress Security        Low     19: Ingress Security        Low
      5: Port Type              Tunnel   20: Port Type              Tunnel

UTP  6: Port Priority (PRI)      0      Mngmnt 21: Port Priority (PRI)      0
      7: PVID (Port VLAN ID)    2      22: PVID (Port VLAN ID)    2
      8: Tagged Packets Use      PVID    23: Tagged Packets Use      PVID
      9: Ingress Security        Low     24: Ingress Security        Low
     10: Port Type              Tunnel   25: Port Type              Tunnel

BP A 11: Port Priority (PRI)      0      Module Global Settings:
      12: PVID (Port VLAN ID)    2      26: C-TAG (hex)            8100
      13: Tagged Packets Use      PVID    27: Q-in-Q (S-TAG) (hex)   8100
      12: PVID (Port VLAN ID)    2
      13: Tagged Packets Use      PVID
      14: Ingress Security        Low
      15: Port Type              Tunnel

Enter Choice, Previous Screen(0), (H)elp, E(x)it >

```

```

Tag VLAN Control - iConverter GX/TM2                               iConverter, Serial Agent
Identifier -
Chassis Number = 1      Slot Number = 1      Model Number = 8939N-0

Fiber 1: Port Priority (PRI)      0      Module Global Settings:
      2: PVID (Port VLAN ID)    2      16: C-TAG (hex)            8100
      3: Tagged Packets Use      PVID    17: Q-in-Q (S-TAG) (hex)   8100
      4: Ingress Security        Low
      5: Port Type              Tunnel

UTP  6: Port Priority (PRI)      0
      7: PVID (Port VLAN ID)    2
      8: Tagged Packets Use      PVID
      9: Ingress Security        Low
     10: Port Type              Tunnel

Mngmnt 11: Port Priority (PRI)      0
      12: PVID (Port VLAN ID)    2
      13: Tagged Packets Use      PVID
      14: Ingress Security        Low
      15: Port Type              Tunnel

Enter Choice, Previous Screen(0), (H)elp, E(x)it >

```

#### 4.2.9 VLAN Membership Table

The VLAN Membership Table lists the permitted VLAN ID (VID) for each egress port on the module. Only packets that are assigned a VID value that matches one of the egress port's VID memberships are allowed to egress through the port.

When the Ingress Security is set to High for a specific port, the membership table is used to list the VID's of the packets that are allowed to ingress that port.

VLAN Membership is accessed by selecting option 3 from the *Port* configuration screen. The *VLAN Membership* screen will be displayed.

PI

```
VLAN Membership - iConverter GX/TM2          iConverter, Serial Agent
Identifier -

Chassis Number = 1      Slot Number = 1      Model Number = 8923N-1

          VLAN ID (VID)      Fiber      UTP      BP A      BP B      Mngmnt

VLAN TABLE IS EMPTY

Add new entry (a), Delete entry (d), Edit entry (e), Clear table (c)

Enter Choice, Previous Screen(0), (H)elp, E(x)it >
```

SA

```
VLAN Membership - iConverter GX/TM2          iConverter, Serial Agent
Identifier -

Chassis Number = 1      Slot Number = 1      Model Number = 8923N-1

          VLAN ID (VID)      Fiber      UTP      Mngmnt

VLAN TABLE IS EMPTY

Add new entry (a), Delete entry (d), Edit entry (e), Clear table (c)

Enter Choice, Previous Screen(0), (H)elp, E(x)it >
```

Initially the table is empty. To configure the ports with VLAN IDs, select option (a) from the *VLAN Membership* configuration screen.



PI

Membership Entry - iConverter GX/TM2      iConverter, Serial Agent  
Identifier -

Chassis Number = 1      Slot Number = 1      Model Number = 8923N-1

VLAN Table Membership Entry 1

-----

1: VLAN ID	2
2: Fiber Port Membership	No
3: UTP Port Membership	No
4: BP A Port Membership	No
5: BP B Port Membership	No
6: Mngmnt Port Membership	No

7: Submit Entry As Defined

Enter Choice, Previous Screen(0), (H)elp, E(x)it >

SA

Membership Entry - iConverter GX/TM2      iConverter, Serial Agent  
Identifier -

Chassis Number = 1      Slot Number = 1      Model Number = 8923N-1

VLAN Table Membership Entry 1

-----

1: VLAN ID	2
2: Fiber Port Membership	No
3: UTP Port Membership	No
4: Mngmnt Port Membership	No

5: Submit Entry As Defined

Enter Choice, Previous Screen(0), (H)elp, E(x)it >

To add a VLAN ID to the membership table, select option *1* and enter the ID #. To associate the VLAN ID to a port, select the appropriate port option (2 - 6).

PI

Membership Entry - iConverter GX/TM2 iConverter, Serial Agent  
Identifier -

Chassis Number = 1 Slot Number = 1 Model Number = 8923N-1

VLAN Table Membership Entry 1  
-----

+1: VLAN ID	100
+2: Fiber Port Membership	Yes
3: UTP Port Membership	No
4: BP A Port Membership	No
5: BP B Port Membership	No
6: Mngmnt Port Membership	No

\*7: Submit Entry As Defined

Enter Choice, Previous Screen(0), (H)elp, E(x)it >

SA

Membership Entry - iConverter GX/TM2 iConverter, Serial Agent  
Identifier -

Chassis Number = 1 Slot Number = 1 Model Number = 8923N-1

VLAN Table Membership Entry 1  
-----

+1: VLAN ID	100
+2: Fiber Port Membership	Yes
3: UTP Port Membership	No
4: Mngmnt Port Membership	No

\*5: Submit Entry As Defined

Enter Choice, Previous Screen(0), (H)elp, E(x)it >

Once all the VLAN IDs have been assigned, select option 5 or 7 to save the entries.

PI

VLAN Membership - iConverter GX/TM2 iConverter, Serial Agent  
Identifier -

Chassis Number = 1 Slot Number = 1 Model Number = 8923N-1

	VLAN ID (VID)	Fiber	UTP	BP A	BP B	Mngmnt
1:	100	Yes	No	No	No	No

Add new entry (a), Delete entry (d), Edit entry (e), Clear table (c)

Enter Choice, Previous Screen(0), (H)elp, E(x)it >

The VLAN membership entries are saved from the *Port* configuration screen, option 4.

### 4.2.10 cNode Loopback

The GX/TM2 has implemented Iometrix cNode Level 1 agent for testing performance metrics. The agent recognizes measurement packets and loops them back to the sending cNode device. Iometrix cNode equipment is required to obtain performance metrics.

cNode configuration is accessed by selecting option *10* from the **Port** configuration screen.

PI SA

```
cNode Control -iConverter GX/TM2                               iConverter, Serial Agent
Identifier -

Chassis Number = 1      Slot Number = 2      Model Number = 8923N-1

1:      cNode Loopback      Disabled
2:      cNode Rate Limit    64 Kbps

Enter Choice, Previous Screen(0), (H)elp, E(x)it >
```

From the menu, loopback can be enabled or disabled and the rate limit can be selected.

### 4.2.11 Port Statistics

The GX/TM2 module provides port statistics on both the fiber and UTP port.

The Port Statistics can be viewed by selecting option *P* from the **Module** configuration screen.

PI

```
Module - iConverter GX/TM2                               iConverter, Serial Agent
Identifier -

Chassis Number      = 1      Switch  ON Condition  OFF Condition  H/W      Actual
Slot Number         = 7      1: Port 1 Manual  Port 1 AN      Off       Off
Model Number        = 8939N-0 2: Port 2 Manual  Port 2 AN      Off       Off
Serial Number       = xxxxxxxx 3: Port 2 10/100  Port 2 1000    Off       Off
Manufacturing Date  = xxxxxxxx 4: Port 2 10      Port 2 100     Off       Off
Product Revision    = xx       5: Port 2 HDX     Port 2 FDX     Off       Off
Software Revision   = xx       6: Link Propagate Link Segment    Off       Off
LED                 7: Remote Fault  Normal         Off       Off
1: Power            = On       8: Symm Fault Det Normal         Off       Off
2: Power Supply 1   = Off      9: BP A Enabled  BP A Disabled  On        On
3: Power Supply 2   = On      10: BP B Enabled BP B Disabled  On        On
4: Power Supply 3   = Off      11: Slave Only   Master/Slave    Off       Off
5: Port 1 Link      = Off      12: Not Available
6: BP Master        = On      Configuration Setting
7: UTP 100+10 Link  = Off      13: Pause Function Disabled
8: UTP 1000+10 Link= Off      14: Not Available
9: UTP FDX          = Off      15: Not Available
17: IP Protocol State Off
18: Management Mode ah OAM

Toggle Switch(1-16), (I)dentifier, (R)eset, (H)elp, (P)ortStat, Port(C)tl > P
```

```
Port Statistic
Module - iConverter GX/TM2                      iConverter, Serial Agent
Identifier -

Chassis Number   = 1
Slot Number      = 7
Model Number     = 8939N-0

                        Port Statistics
-----
                        Fiber          UTP
Rx Bytes          0                0
Rx Packets        0                0
Rx Total Packets  0                0
Tx Bytes          0                0
Tx Packets        0                0

Enter Choice, Previous Screen(0), (H)elp, E(x)it >
```

To refresh the Port Statistic screen, press <ENTER>.

## 5.0 GX/TM2 SPECIFICATIONS

	Plug-in Module	Standalone Tabletop	Standalone Wall-Mount
Description	10/100/1000BASE-T UTP to 1000BASE-X Fiber Media Converter with integrated management		
Protocols	10BASE-T, 100BASE-TX,1000BASE-T, 1000BASE-X with 10,240 bytes max. frame size		
Cable Types			
UTP	EIA/TIA 568A/B, Category 5 and higher		
Fiber	Multimode: 50/125, 62.5/125, 100/140 um, Single-mode: 9/125 um		
Serial	RS-232, 22 to 24 AWG, 12 to 50 pF/ft.		
Connector Types			
UTP	RJ45		
Fiber SFP: Dual Fiber: Single Fiber:	LC SC, ST, LC, MT-RJ SC		
Serial	Mini DIN-6 female, mini DIN-6 male to DB-9 female adapter included		
Controls	DIP-Switches and LEDs		
802.1p Priority Levels and VID Priority Level Groups	4 Levels (PRI 0-1, 2 -3, 4-5, 6-7)		
Power Requirements			
DC Power	1.1A @ 3.3VDC	Nominal: 0.6A @ 9.0VDC Voltage Range: 8 - 15VDC	
DC Power Connector	Power supplied by backplane	2.5mm Barrel Connector or Terminal Connector	
AC Power Adapter [US]	N/A	100-120VAC/60Hz 0.06A @ 120VAC	
AC Power Adapter [Universal]	N/A	100-240VAC/50-60Hz 0.06A @ 120VAC	
Dimensions	W: 2.8" x D: 4.5" x H: 0.85"	W: 3.1" x D: 4.8" x H: 1.0"	W: 3.8" x D: 4.8" x H: 1.0"
Weight			
without power adapter	8 oz.	1 lb.	
with power adapter	N/A	1.5 lb.	
Compliance	UL, CE, FCC Class A		
IP-Based Management	Telnet; SNMPv1, SNMPv2c, SNMPv3		
Temperature			
Operational - Commercial	0 to +50°C		
Operational - Wide Range	-40 to +60°C (-25°C Cold-Start Temperature)		
Operational - Extended	-40 to +75°C		
Storage	-40 to +80°C		
Humidity (non-condensing)	5 to 95%		
Altitude (Operational)	-100m to 4,000m		
MTBF [hrs]			
without power adapter	450,000		
with power adapter [US]	N/A	250,000	
with power adapter [Unv]	N/A	100,000	

## 6.0 TROUBLESHOOTING GUIDE

### 6.1 OVERVIEW

The GX/TM2 module has several LED indicators available to assist in the determination of problems. Refer to Section 3.5, Verify Operation, for LED definitions.

#### 6.1.1 Power Issues

**Problem:**

*The Power LED does not illuminate after installation is complete or no LED indicators are ON*

**Possible Causes:**

A. For standalone modules, confirm that the power supply is connected to both the module and the AC or DC power source. If Power LED is still not illuminated, use a voltmeter and check the voltage of the power source (AC/DC converter used with the standalone unit should measure between 9 -15 VDC no load at the barrel connector).

B. For plug-in module, confirm that the chassis is connected to an AC or DC power source. If the Power LED is still not illuminated, remove the module and verify the operation of other modules in the chassis. If power is present and the module will not turn ON, replace the module.

C. The plug-in module requires ~ 3.6 watts (3.3VDC @ 1.1 amps) for normal operation. The AC Power Supply in a 19-Module Chassis can supply ~ 60 watts (3.3VDC @ 18amp). A fully loaded 19-Module chassis of GX/TM2 modules will require two power supplies for standard operation. This condition will cause the power LED not to illuminate.

#### 6.1.2 Fiber Issues

**Problem:**

*The Fiber Optic link LED does not illuminate after installation is complete.*

**Possible Causes:**

A. Verify the Link Mode selection is set to Link Segment (LS). Until a stable link is established, leave the Link Mode configured for LS. After a Link presence is established, the Link Mode selection can be modified.

B. Confirm that the fiber optic cable is properly connected to the *iConverter* GX/TM2 and the remote fiber optic device. Connecting the fiber between the Tx of the far end to the Rx on the near end will cause the FO LED on the near end to illuminate (only when the link mode is configured for Link Segment). Completing the connection will cause the far end FO LED to illuminate.

C. Confirm that the fiber cable type matches the fiber transceiver type (multimode, single-mode) on the *iConverter* GX/TM2.

D. If using a dual-fiber model, confirm that the transmitter (Tx) is attached to the receiver side of its link partner, and that the receiver (Rx) is attached to the transmitter. A optical power meter will assist in determining which cable should be connected to the Tx and Rx of the module. To insure proper operation, a minimum of -30dBm must be present at the fiber optic receiver.

E. If using a single-fiber model, confirm that the Tx wavelength on the *iConverter* GX/TM2 matches the Rx of the connected fiber optic device. Single-fiber units transmit and receive at different wavelengths (1510nm/1310nm). Verify the model numbers to insure proper compatibility.

### 6.1.3 UTP Issues

**Problem:**

*The UTP link LED does not illuminate after installation is complete.*

**Possible Causes:**

- A. Confirm that the UTP cable is connected properly to the *iConverter* GX/TM2 and the attached UTP device. Once a connection has been established between the *iConverter* and its link partner (switch or workstation), the corresponding UTP LED should illuminate. If the LED does not illuminate, check the Link Mode configuration. A link mode other than Link Segment may cause the UTP LED not to turn ON.
- B. Verify the *iConverter* GX/TM2 UTP port is configured with the proper settings based on the attached device (AN or MAN, 10 or 100 or 1000, HD or FD).
- C. Verify the distance between the *iConverter* and the link partner is within 100 meters.
- D. Confirm that the UTP cable pin-out is correct (EIA/TIA-568-A). The module has auto-crossover capability, so it will accept either a straight-through or crossover cable.

**NOTE:** If corrective actions do not resolve your situation, please contact Omnitron Systems Technical Support.

## **7.0 WARRANTY**

This product is warranted to the original purchaser against defects in material and workmanship for a period of TWO YEARS from the date of shipment. A LIFETIME warranty may be obtained by the original purchaser by REGISTERING this product with Omnitron within 90 days from the date of shipment. TO REGISTER, COMPLETE AND MAIL OR FAX THE ENCLOSED REGISTRATION FORM TO THE INDICATED ADDRESS. Or you may register your product on the Internet at <http://www.omnitron-systems.com>. During the warranty period, Omnitron will, at its option, repair or replace a product which is proven to be defective.

For warranty service, the product must be sent to an Omnitron designated facility, at Buyer's expense. Omnitron will pay the shipping charge to return the product to Buyer's designated US address using Omnitron's standard shipping method.

### **Limitation of Warranty**

The foregoing warranty shall not apply to defects resulting from improper or inadequate use and/or maintenance of the equipment by Buyer, Buyer-supplied equipment, Buyer-supplied interfacing, unauthorized modifications or

tampering with equipment (including removal of equipment cover by personnel not specifically authorized and certified by Omnitron), or misuse, or operating outside the environmental specification of the product (including but not limited to voltage, ambient temperature, radiation, unusual dust, etc.), or improper site preparation or maintenance.

No other warranty is expressed or implied. Omnitron specifically disclaims the implied warranties of merchantability and fitness for any particular purpose.

### **Exclusive Remedies**

The remedies provided herein are the Buyer's sole and exclusive remedies. Omnitron shall not be liable for any direct, indirect, special, incidental, or consequential damages, whether based on contract, tort, or any legal theory.

### **Technical Support**

140 Technology Dr. #500  
Irvine, CA 92618

949-250-6510 tel  
949-250-6514 fax

email: [support@omnitron-systems.com](mailto:support@omnitron-systems.com)  
web: [www.omnitron-systems.com](http://www.omnitron-systems.com)